



## **NASA SBIR 2007 Phase I Solicitation**

### **S4.05 Smart, Autonomous Command and Data Handling System, Algorithms and Data Management**

**Lead Center: ARC**

The cost of flight software, including algorithms and data management, is continuing to increase and multiply in complexity. Novel on-board data analysis can greatly decrease the bandwidth needed back to Earth, and can alert scientists for time sensitive information and follow-up investigations.

This subtopic is seeking proposals in the following, but not limited, areas:

- Innovative flight software development techniques
  - Planning and scheduling software
  - Modular routines for repeatability on future missions.
- Autonomous fault tolerant software development that acts in a repeatable, predictable manner.
- Automated system level testing.
- On board automated approaches for data compression and payload data analysis to enable low bandwidth communications to the ground station.
- Participatory, distributed analysis techniques utilizing public interest and resources (e.g., Stardust @ Home and HiRise data analysis).

Phase 1 - Research should demonstrate the technical feasibility and show a path towards a software demonstration. Bench or lab-level demonstrations showing concept viability is encouraged. Commercial applicability and modularity should be addressed.

Phase 2 - Emphasis should be placed on developing and demonstrating the software technology under relevant test conditions. Additionally, a path should be outlined that shows how the technology could be commercialized or further developed into space-worthy systems. Researchers should deliver a demonstration package for functional evaluation by NASA at the completion of the Phase 2 contract.